User Manual and Parts Catalogue Verti-Core II®

Model: 1600

Serial number:

Translation of the original operating instructions

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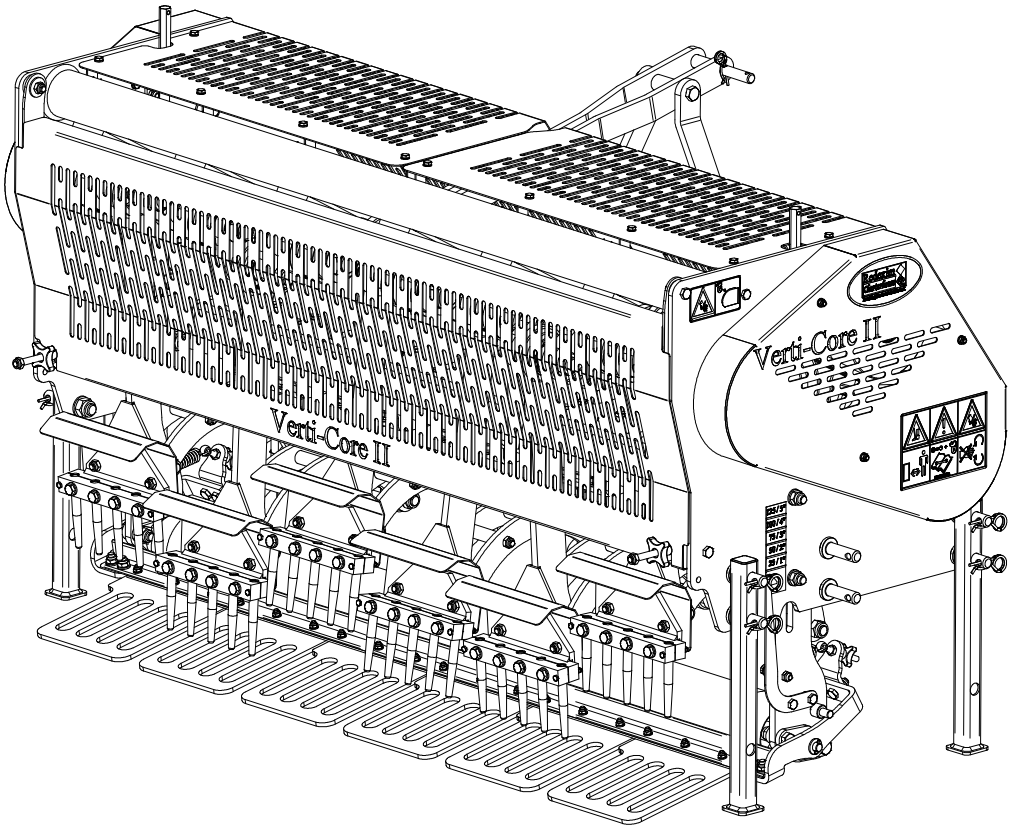

NOTE:
PLEASE READ THIS USER MANUAL CAREFULLY PRIOR TO USING THE VERTI-CORE II® TO ENSURE SAFE USE OF THE MACHINE AND TO GET THE BEST RESULTS.

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PREFACE

Congratulations on the purchase of your Verti-Core II. In order to ensure safe operation and a long life span of this Verti-Core II it is crucial that you read and fully understand this user manual. Without full knowledge of the contents of this manual, you will not be able to safely operate this machine.

The Verti-Core II is not a stand-alone machine. It is the user's responsibility to use a suitable tractor. The user will also have to assess the tractor/ Verti-Core II combination's safety aspects, such as noise levels, user instructions and risk analysis.

On the following page you will find general safety instructions. Every user must be acquainted with these instructions and apply them at all times. Below you will find a registration card, which you are asked to return to us in order for us to be able to handle any future claims.

This User Manual provides a wide range of instructions which are numbered in a specific order. You should always work in that order. If an instruction is accompanied by an ⚠ icon, it is a safety instruction. If an ☞ icon is used, the information in question is a tip and/or note.

All information and technical specifications provided at the moment that this document is published are the most recent ones. Design specifications may be changed without prior notice.

This document is a translation of the original operating instructions.
Upon request, the original operating instructions are available in Dutch.

WARRANTY CONDITIONS

THIS VERTI-CORE II COMES WITH A WARRANTY AGAINST DEFECTS IN MATERIALS.
THIS WARRANTY IS VALID FOR A TERM OF 12 MONTHS FROM THE PURCHASE DATE.
VERTI-CORE II WARRANTIES ARE SUBJECT TO THE "GENERAL CONDITIONS FOR SUPPLY OF PLANT AND MACHINERY FOR EXPORT, NUMBER 188", AS PUBLISHED UNDER THE AUSPICES OF THE UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE.

REGISTRATION CARD

Complete the following table for your records:

Machine serial number	
Dealer name	
Purchase date	
Notes	

! SAFETY INSTRUCTIONS !

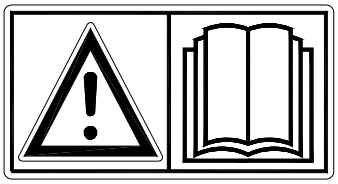

Fig. 1

The Verti-Core II is designed to facilitate safe operation. But safe operation is only possible if all safety instructions described in this manual are observed without fail.
Read and understand (Fig. 1) the manual prior to working with the Verti-Core II.
Failure to use the machine as described in the manual can lead to a serious risk of physical injury and/or damage to the Verti-Core II.

(1) The Verti-Core II is exclusively intended for the treatment of lawns or areas where grass should be growing.
Any other use will constitute improper use. The manufacturer will not assume any liability for any damage ensuing from improper use. Any risks involved in such improper use will be the full responsibility of the user.
Proper use also includes the carrying out of operating, maintenance and repair instructions given by the manufacturer.

Inspect the area you will be treating prior to using the Verti-Core II. Remove any loose obstacles and avoid uneven areas.

(2) The Verti-Core II has been built in line with the latest technological advances to enable safe use.

Use, maintenance or repairs of the machine by untrained persons can give rise to a risk of injury to the user and any bystanders. **Avoid this at all times!**

Always use the Verti-Core II in combination with a suitable tractor as described in the technical data.

(3) All persons assigned by the proprietor to operate, maintain or repair the Verti-Core II must first have fully read and understood the user manual, and, in particular, the **Safety Instructions** chapter.

The user is responsible for a **safe Tractor/Verti-Core II combination. The combination must be assessed** for noise levels, safety, risk and user-friendliness. User instructions for the combination will also have to be drawn up.

(4) It is **obligatory** for the user to check the Verti-Core II for any **visible damage and defects** prior to using it.
Changes to the Verti-Core II (including its functioning) that negatively affect safety, must be remedied/undone right away.
Making any changes or additions to the Verti-Core II (except for those approved by the manufacturer) is not permitted for reasons of safety.

If any **modifications** have been made to the Verti-Core II, its current CE mark will lapse, and the party that implemented the modifications must secure a new **CE mark himself**.

Always check the Verti-Core II for loose nuts/bolts/parts prior to use.

Check any possible hydraulic hoses regularly, and replace them when they are damaged or showing signs of excessive wear. Replacement hoses must meet the technical requirements specified by the manufacturer.

The hydraulic system, if installed, must **always** be depressurized prior to working on it.

The Verti-Core II must **NEVER** be used when protective covers and safety stickers are missing.

NEVER crawl under the Verti-Core II.
If necessary, tip the Verti-Core II over.

NEVER get off the tractor when the engine is still running.

The Verti-Core II must always be secured against sagging/rolling away/sliding during maintenance, setup and repair work.

Always switch off the tractor engine and remove the key from the ignition, and disengage the PTO prior to any maintenance, setup and repair work. (Fig. 2)

Fig. 2

Only use original Verti-Core II parts during maintenance or repair work to safeguard the safety of both machine and user.

Repair work on the Verti-Core II must only be carried out by competent and authorized technical staff.

Keep a maintenance log.

(5) Apart from the instructions from this user manual, general occupational health and safety instructions also have to be observed.

When going out onto public roads with the machine, relevant traffic regulations will also apply.

Transporting people is not permitted!

Do not use the Verti-Core II in the dark, in heavy rain/strong winds, or on slopes above 20 degrees.

(6) Prior to working with the machine, all people who will be operating the Verti-Core II must be acquainted with all its functions and control elements.

Hook up the Verti-Core II to the tractor as per the instructions **(Danger of physical injury!)** Make sure you have good visibility, both close by and of the entire surroundings, prior to setting off.

There are safety stickers on both sides of the Verti-Core II (Fig. 3,4,5) as well as on the back (Fig. 6), which all have the same meaning. These safety stickers must always be visible and readable, and they must be replaced without delay whenever they are damaged.

Keep all people out of the danger area of the Verti-Core II during operation, because they would otherwise be subjected to serious danger of personal injury caused by moving parts. (Fig. 3)

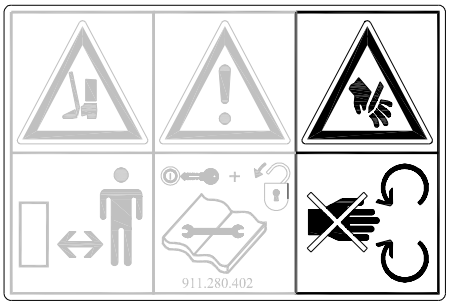

Fig. 3

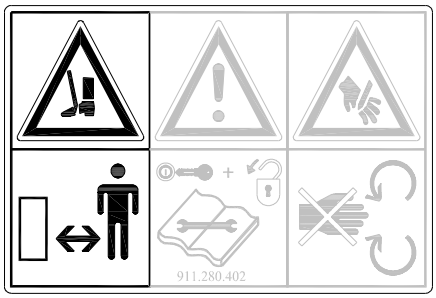

Fig. 4

Maintain a distance of at least 4 metres! (Fig. 4)

The back cover has to remain closed at all time and be damage-free during operation of the machine! (Fig. 5)

Beware of body parts getting caught when opening the back cover! (Fig. 6)

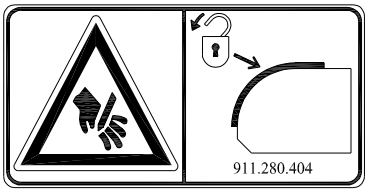

Fig. 5

Fig. 6

Check the permitted lifting power of the tractor.

Wear appropriate clothing. Wear sturdy steel-capped shoes, full-length trousers, long hair tied back and no loose garments.

(7) Location of safety stickers. (Fig. 7)

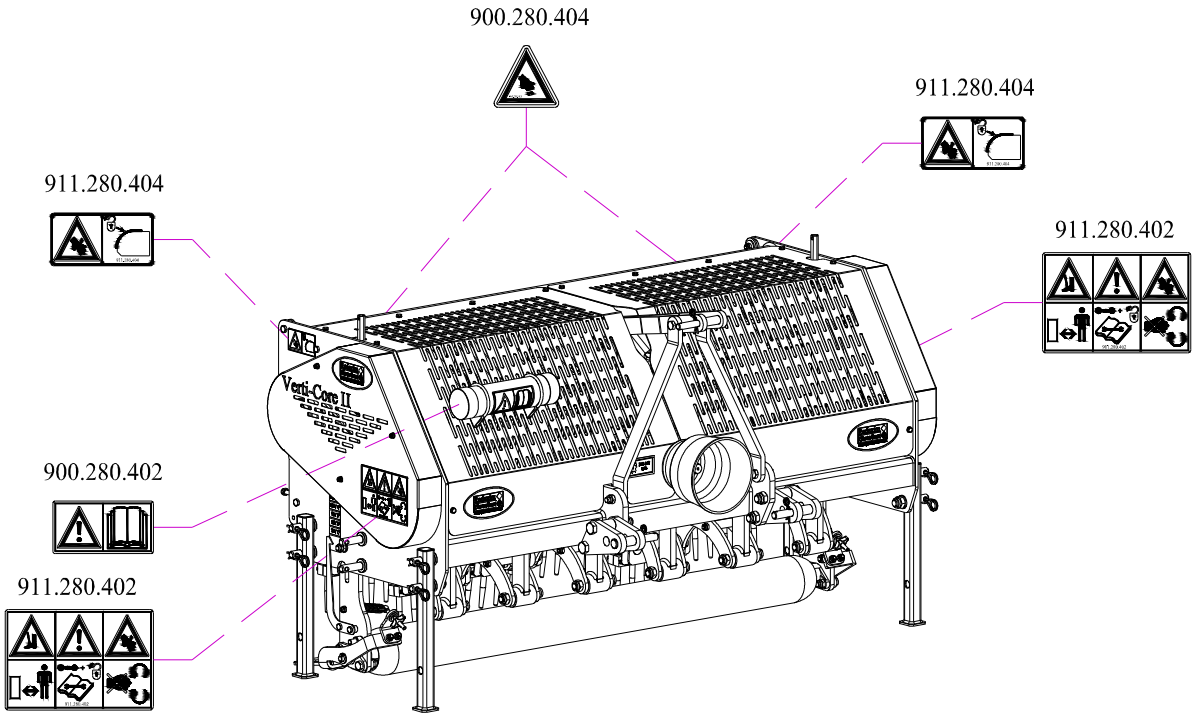

Fig. 7

⚠**All safety stickers have to remain on the machine at all times - and be fully understood by the operator.**

Used oil is harmful to the environment; dispose of it in line with local regulations.

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1.0 TECHNICAL DATA

Model	1600
Working width	1.6 m (63”)
Working depth	0mm - 100mm (0”-4”)
Tractor speed measured at 540 rpm on power take-off (PTO) shaft Hole spacing 55 mm (2.2”) Hole spacing 110 mm (4.3”)	 Up to 1.8 km/h (1.2 mph) Up to 3.6 km/h (2.4 mph)
Weight	820 Kg (1808 lbs)
Recommendations for tractor	45 HP with minimum lifting capacity of 1000 Kg (2205lbs)
Tine spacing	55 mm (2.5”) @ 19mm (3/4”) holes 68.75 mm (4”) @ 22mm (7/8”) holes
Hole spacing in driving direction	25 – 110 mm (1” – 4.3”)
Maximum capacity Hole spacing 55 mm (2.2”) Hole spacing 110mm (4.3“)	 Up to 2880 m²/h (31000 ft²/h) Up to 5760 m²/h (62000 ft²/h)
Shipment dimensions	L x W x H 1960 x 1040 x 1110 mm 77” x 41” x 43.7”
3-point hitch	CAT. 1
Gearbox oil	SAE 90
Lubricant	EP 2
Standard parts	-Set hollow tines 15/16” with ¾”” mounting -Roller. -Tool case with tools and user manual. -PTO shaft. -Turf hold down fingers
Options	-7/8” Tine holders with 4 tines

2.0 TAKING THE MACHINE OFF THE PALLET

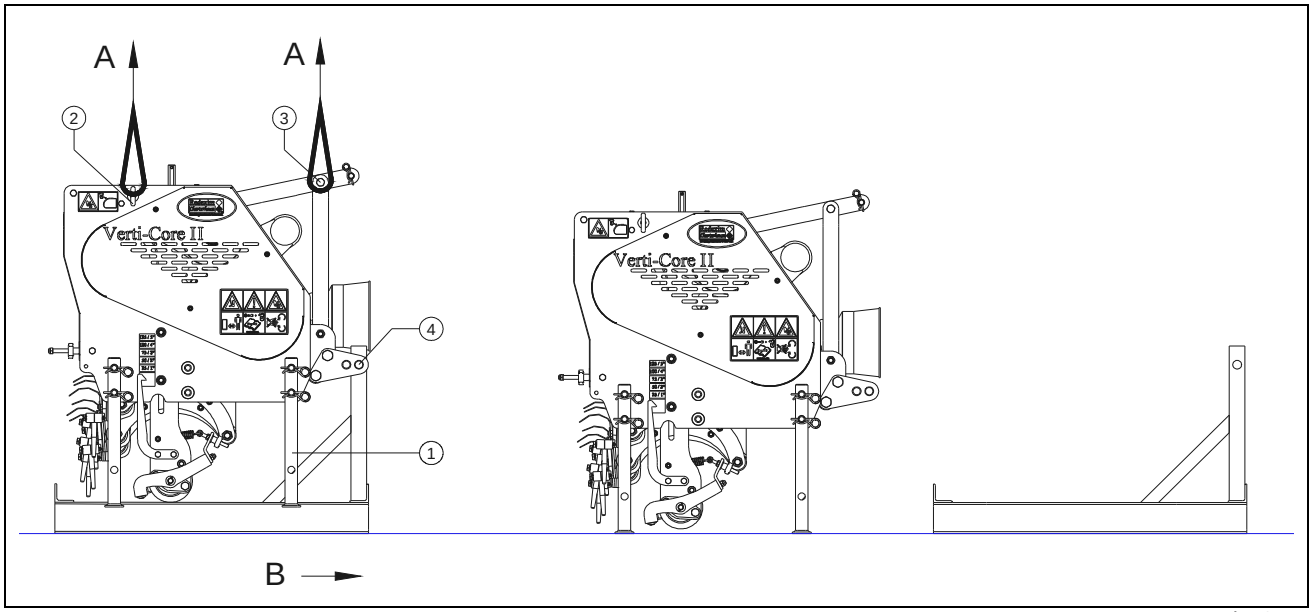

Fig. 8

The machine is placed on the pallet vertically. Perform the following actions to remove the machine from the pallet and place it horizontally on the floor (see Fig.8):

⚠ **!! NEVER CRAWL UNDER THE MACHINE !!**

1. Ensure the legs (1) are mounted in such a way that the machine will eventually stand on its legs (1) when the pallet has been removed.
2. Attach a cable to the lifting points (2) on both sides of the machine, and to the top of the 3-point hitch (3) on the front.

   ⚠ **Make sure the cable/crane/lift has the capacity to lift at least 800 kg (1764 lbs).**

3. Lift the machine, including the pallet, about 50 mm (2") off the ground (A).
4. Remove the pallet by removing the bottom 3-point pins (4).
5. Pull the pallet from under the machine (B).
6. Lower the machine in a controlled and slow fashion until it is fully on the ground.

   ⚠ **!! STAY CLEAR OF THE MACHINE, IT CAN SLIDE !!**

3.0 THE PTO

The PTO is an essential part of the machine. This part drives the machine from the tractor, and ensures safe use of the machine, providing it has been maintained and installed correctly. The PTO has its own CE certification. Read the PTO manual, which you will find on the PTO itself.

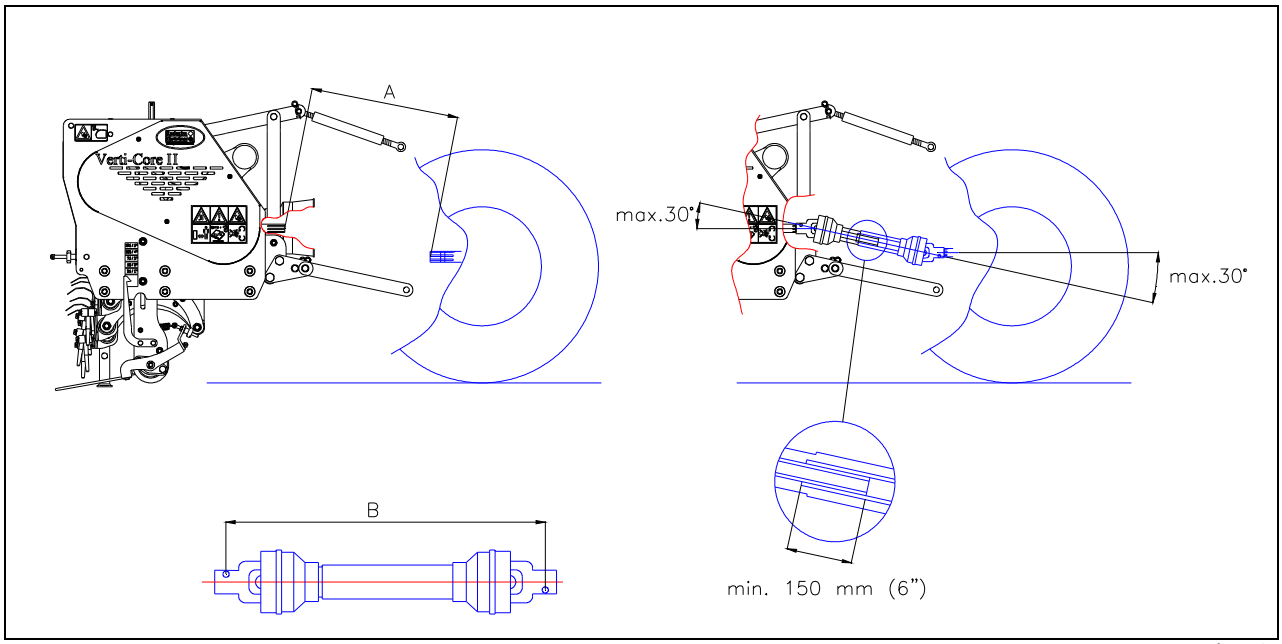

Fig. 10

3.1 PTO LENGTH (Fig. 10)

The length of the PTO is crucial. If it is too long, the tractor and/or Verti-Core II can be damaged. When the overlapping length of the sleeves drops below 150 mm (6") at any time, the PTO can be damaged.

⚠ **!! PTO length will change when the machine is lifted or used on a different tractor!!**

In order to attain the right PTO length, when one has been purchased new or was previously used on another tractor, you will have to do the following:

1. Couple the Verti-Core II to the tractor as described in Chapter 5.0.
2. ⚠ **!! Switch off the tractor and make sure the tractor is secure and cannot start moving !!**
3. Lower the Verti-Core II onto the floor until it is resting on the front and back rollers.
4. Measure the distance A between the PTO connection of the tractor and that of the Verti-Core II, from groove to groove.
5. Measure length B of the PTO in its shortest position, from locking pin to locking bolt.
6. Split the PTO in two, and remove the protective cover from both ends.
7. Both the ends of the sleeves and of the safety covers have to be shortened: (B-A) + 75 mm (3").
8. De-burr all parts, use some grease and assemble the parts.
9. Mount the PTO on the Verti-Core II side.
10. Couple the other end of the PTO to the tractor.
11. Check sleeve overlap.

⚠ **!! Never use the machine with a damaged PTO protection cover; Replace it first!!**

3.2 PTO USE

Proper use of the PTO requires checking the following items:

1. While the Verti-Core II is operating, the angle of the pivoting points must never exceed 30 degrees.
2. Pivoting points must always be in line.
3. Sleeve overlap must be at least 150 mm.
4. Never use the machine with a damaged PTO protection cover.

3.3 PTO INFORMATION AND MAINTENANCE

The slip clutch, when used and maintained correctly, will protect your machine against damage.
The following items are important here:

1. The length of the spring is set to 33 mm (1.300") as standard.
2. When the slip clutch slips, the bolts/nuts can be tightened a further quarter turn, up to a minimum spring length of 31.5mm (1.250"). Further compression will subject the machine to excessive load.

☞ When bolts/nuts are tightened too much, the machine could eventually sustain damage, or unsafe situations could occur.

3. The slip clutch must be maintained on a monthly basis. Do so as follows:
   - Remove the top PTO protection cover from the machine.
   - Loosen all bolts/nuts 2 turns.
   - Operate the machine on the lawn at low speed.
   - If the clutch slips, stop the machine after 10 seconds.
   -If the clutch is not slipping, further loosen the bolts or move on to (annual) maintenance (see point 4 below)
   - If the clutch has slipped, tighten the bolts/nuts up to the point at which the slip clutch functions properly again.
   * Do not immediately turn it back to as it was in the previous setting.

4. Annual maintenance:
   - Remove the PTO from the machine
   - Inspect the PTO components. All damaged parts must be replaced.
   - **Disassemble the slip clutch by removing all spring assembly bolts/nuts; the slip clutch should then fall apart.**
   - Lay all parts down and check them closely. Replace any damaged and worn parts.
   - Clean all intermeshing parts.
   - Reassemble all parts, and tighten the bolts and nuts so that the springs are set at 33 mm (1.3”).
   - Grease both sleeves and put both PTO parts back together.
   - Reassemble the PTO and mount it on the machine.
   - Adjust, if required, the springs of the slip clutch as described above.

☞ **The slip clutch only protects the machine against short periods of overload when it is set correctly. Prolonged overload will damage the machine. The slip clutch will not protect the machine against that. Be sure to avoid overload on your machine.**

☞ **Please refer to the manual with the PTO for further information on PTO maintenance and disassembly.**

⚠ **If the PTO is shortened incorrectly, or another tractor is used, the gearbox can be subjected to excessive load. This can lead to damage to both the tractor and Verti-Core II!**

4.0 CONNECTING TO THE TRACTOR

Checks prior to connecting the Verti-Core II.

- Check the Verti-Core II for any visual damage, and repair if safe operation of the machine cannot be guaranteed.
- Check whether all nuts and bolts have been tightened properly.
- Check whether all protective covers and safety stickers are in place on the machine, and whether they are undamaged.
  NEVER use the machine without them.

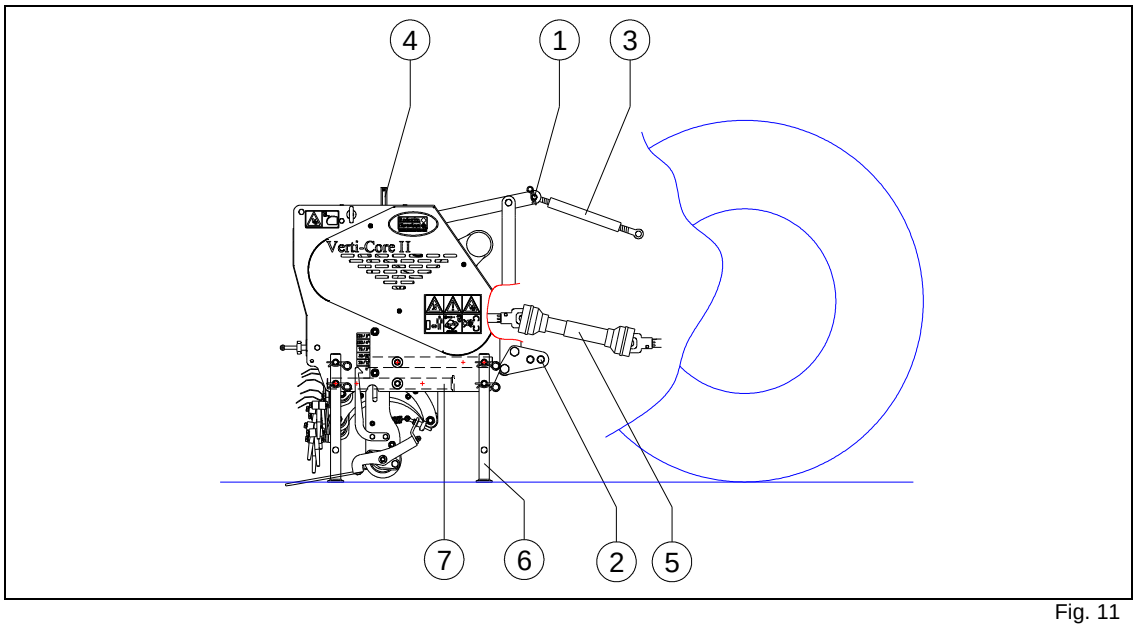

Fig. 11

The Verti-Core II can be connected to the tractor using the 3-point hitch.

The method is as follows: (Fig. 11)

1. Remove the 3-point pins (1 and 2).
2. Mount the PTO on the PTO shaft of the Verti-Core II.
3. Carefully back up the tractor, so that the lifting arms can be connected to the frame.

⚠**!! Make sure the tractor is secured in place and cannot start moving!!**

⚠**!! Switch the tractor off prior to getting off!!**

4. Connect the lifting arms to the bottom 3-point pins (2) and secure them using the included locking pins.
5. Set the stabiliser of the tractor to a 100 mm sideways stroke.
6. Mount the top link of your tractor and extend it until it is at the same height as the top 3-point hitch (1) of the Verti-Core II.
7. Connect the top link (3) to the frame using the top pin (1) and secure using the included locking pin.
8. Keep extending/retracting the top link until the machine makes a 90° angle with the ground.
9. Mount the PTO (5) on the tractor's PTO shaft.

⚠**!! Make sure all locking pins are secured!!**

10. Start the tractor and lift the Verti-Core II off the ground.
11. Place the support legs (6) in the working position (7)

5.0 SETTING THE WORKING DEPTH

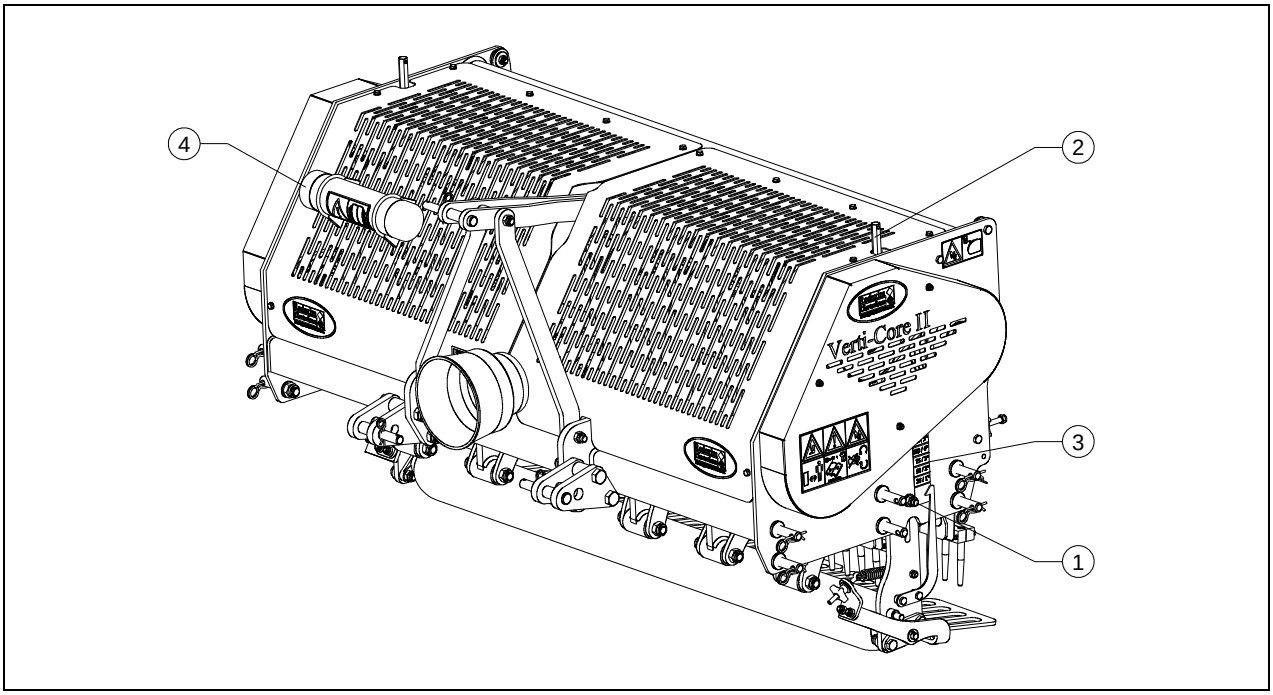

Fig. 12

The working depth can be set when the machine is lifted off the ground. (see Fig.12)

The procedure is as follows:

⚠ **!! Make sure the tractor/Verti-Core II are secured in place, and cannot start moving !!**
⚠ **!! Switch the tractor off prior to getting off !!**

1. Unscrew the nuts (1) on both sides of the machine a few turns.

   ☞ The machine comes with a set of spanners; you can find these in the tool case (4).

2. Set the spindles (2) using the provided spanners, which will change the working depth. Stickers (3) on the side of the machine indicate the depth setting on both sides of the machine.
3. As soon as the right working depth has been achieved, you can tighten the nuts (1) on both sides.
4. Check whether the setting is the same on both sides.

Never change the setting on one side by more than 4 turns. First compensate on the other side, before proceeding.

⚠ **! IMPORTANT!**

Check the working depth first in a static situation on the ground before actually starting the work!

6.0 DRIVING SPEED

Driving speed is limited to 12 km/h (7.5mph).
We advise against going any faster because that could lead to excessive wear and damage to the machine and the treated lawn.

Hole spacing in the driving direction is determined by the driving speed.

The input speed of the PTO shaft must not exceed 540 rpm. If you expect to encounter any hard objects on your path, this speed should be lowered to 200-300 rpm.

☞ Refer to technical specifications for an overview of the relation between tractor speed and hole spacing.

☞ If the Verti-Core II is connected to the tractor incorrectly, Chapter 4, Fig.11, different PTO shaft angles can cause vibrations in the machine's drive shaft. These vibrations can damage the machine and negatively affect the pattern of holes in the ground.

☞ If the PTO shaft length is set incorrectly (too short or too long), the gearbox and/or tractor PTO shaft can be subjected to additional load. This can cause damage.

7.0 STARTING PROCEDURE

The starting procedure is VERY important. If this procedure is not adhered to as described below, the machine can become seriously damaged. The starting procedure is as follows, see Fig. 13.

1. Drive to the spot where you want to start the work.
2. Lower the machine until the lowest tines almost touch the ground.
3. Rev the tractor engine up to about 1000 rpm.
4. Shift the tractor to the right gear and drive forward (A).
5. Switch on the PTO shaft of the tractor (B).
6. CAREFULLY lower the RUNNING machine into the ground as the tractor is moving forward (C).
7. Raise the PTO shaft rpm to the maximum permissible value.

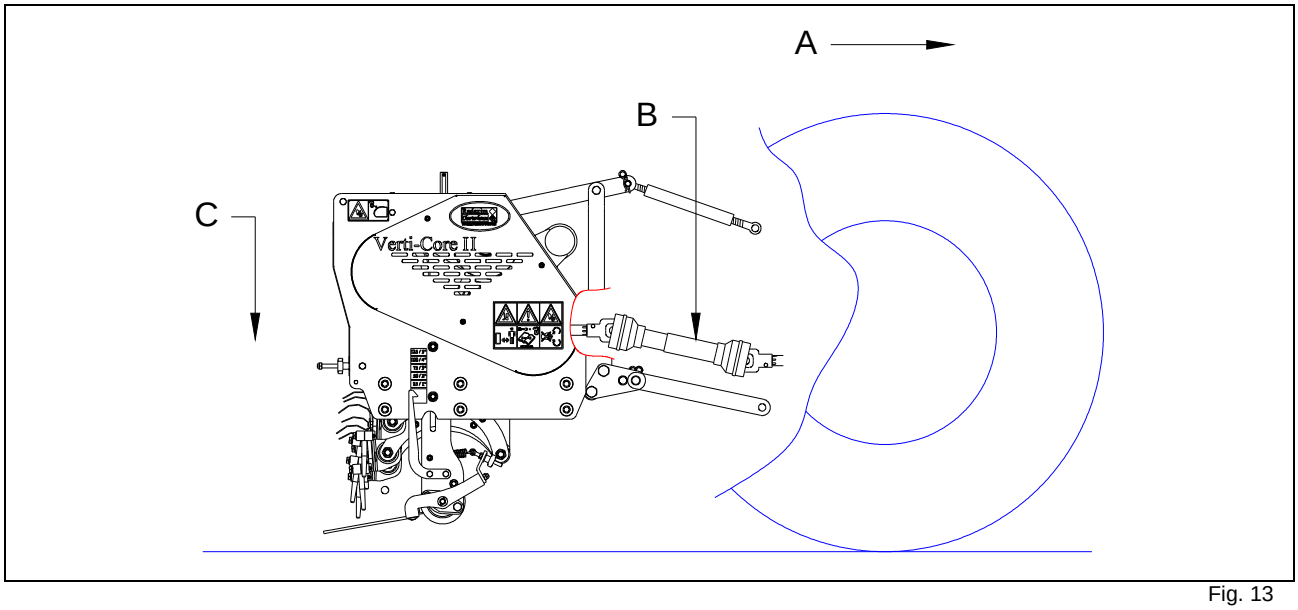

Fig. 13

Stop as follows:

1. Lower the engine rpm to about 1000.
2. Raise the machine from the ground.
3. Disengage the PTO shaft, as soon as the tines are out of the ground.
4. Raise the machine further, until the tines are at least 120 mm above the ground.
5. Go to the next spot and start again as described.

☞ It is absolutely necessary to follow the procedures described above. If the machine is placed in the ground first, with the PTO shaft not yet running, this can lead to serious damage to the machine.

☞ Lower the machine into the ground CAREFULLY.

☞ Be careful when reversing.
During the work, the front roller must rest on the ground in a stable manner. If the machine is unstable, fit different tines or change the working depth.

☞ Not doing anything about machine instability will cause damage to the machine. The machine is NOT protected against prolonged overload.

☞ NEVER reverse with the tines in or near the ground.

☞ NEVER reverse with the tines less than 120 mm above the ground. If the tines touch the ground, the machine and/or the lawn will be damaged.

☞ Do not use a hydraulic top link.

8.0 USING THE VERTI-CORE II

Before the Verti-Core II can be used on a lawn, the following must be checked:

1. Are there any loose objects on the lawn? If so, remove these first.
2. Are there any slopes? The maximum slope on which the machine can function properly is 20 degrees.
   Always work from the top down.
3. Is there any danger of objects flying around, such as balls, which could distract the operator? If so, do **NOT** use the Verti-Core II.
4. Is there any danger of subsiding, sliding? If so, postpone the work until circumstances improve.
5. When the ground is frozen or very wet, the work should be postponed until conditions have improved.
6. Are there any cables/pipes in the ground? If so, find out at what depth they are, and set the working depth to 60% of that depth.
7. Are there any hard objects in the ground? If so, use the Verti-Core II at a low PTO shaft speed, and adjust the working depth.
8. If the ground is very compacted, you should use shorter tines or adjust the working depth.

9.0 TRANSPORTING THE VERTI-CORE II

The user is responsible for the transport of the Verti-Core II behind the tractor on public roads. Check national legislation for regulations for driving on public roads.
Do not exceed a speed of 12 km/h on open fields, due to the weight of the Verti-Core II. Higher speeds can pose a serious danger to the operator/bystanders, and could possibly damage the machine
.

⚠ **Make sure the top link (3), see Fig. 11, is connected and tensioned in the conveyor. If this is not case, the machine could sustain serious damage.**

⚠ **When the machine is lifted off the ground, at least 20% of the weight of the tractor must rest on the front axle.**

10.0 DISCONNECTING THE VERTI-CORE II

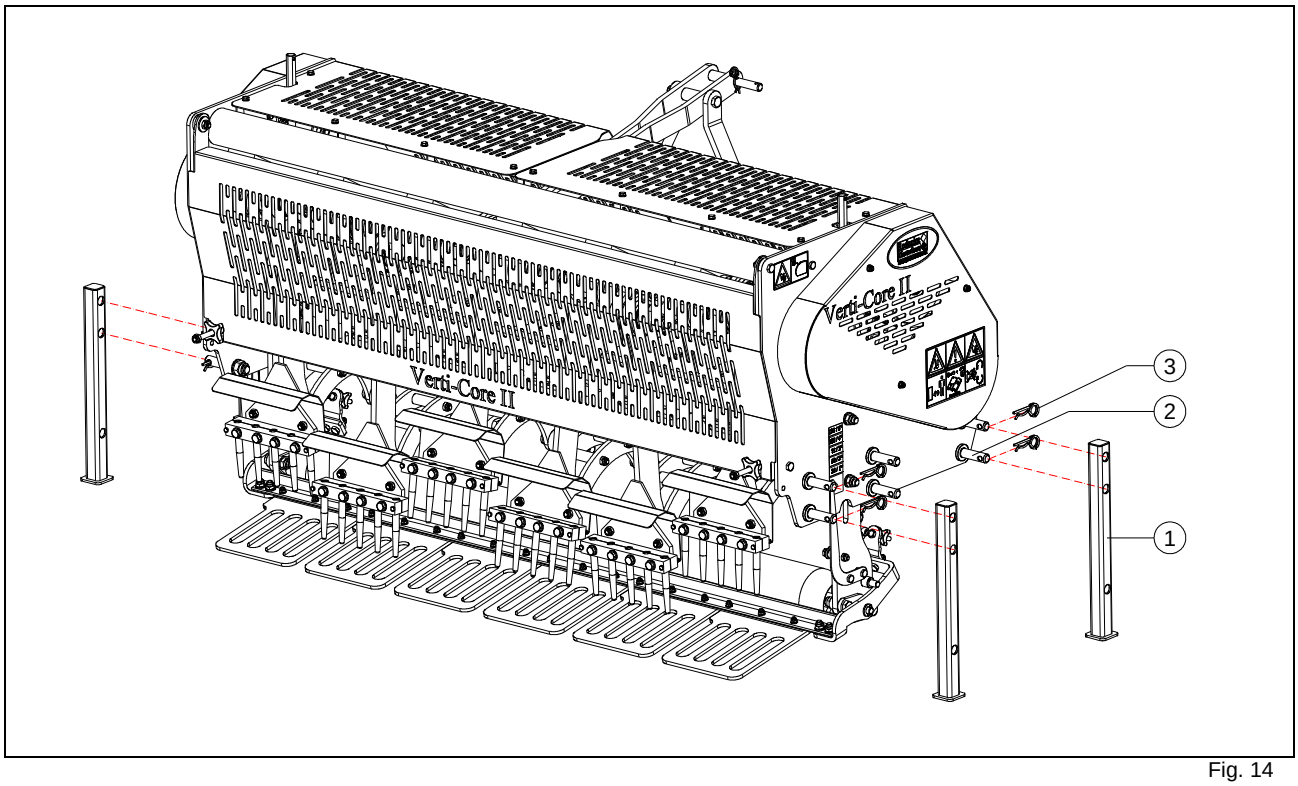

Fig. 14

The machine can be disconnected from the tractor in the following way (See Fig 14):

Drive the Verti-Core II to a storage space with a stable/even floor.

⚠ **!! Make sure the tractor is secured in place and cannot start moving !!**
⚠ **!! Switch the tractor off before getting off !!**

1. Remove the included locking pins (3) from the locating pins (2).
2. Place the support legs (1) on the locating pins (2).
3. Secure the support legs (1) with provided locking pins (3).
4. Loosen the top link (5).

5. Carefully lower the Verti-Core II to the ground.
6. Release the top link and remove it.
7. Disengage the PTO on the tractor side.
8. Disconnect the bottom lifting arms from the tractor.
9. ⚠ **!! Make sure the Verti-Core II is stable and cannot roll/slide away!!**
10. Start the tractor, and drive it away.

11.0 TROUBLESHOOTING

Machine vibrates	Crankshaft turns irregularly Difficult conditions	Machine not at 90 degrees Angles of PTO pivoting points differ PTO pivoting points not in line Adjust working depth Use thinner/shorter tines In case of dryness, sprinkle first
Hollow tines bend/break	Wrong tine Difficult conditions	Change tines, use shorter ones. First break the ground using another machine. Adjust working depth Use thinner/shorter tines In case of dryness, sprinkle first
Front roller not stable on the ground	Wrong tines, too much resistance Difficult conditions	Change tine size Adjust working depth Use different tine size. Adjust working depth Sprinkle first
PTO breaks	Sleeves crack	PTO angles too big PTO angles do not match
Damage to the lawn	Oval holes Damage to the lawn	Ground too wet Decrease forward speed Decrease working depth Use Turf Hold Down Fingers
Irregular pattern of holes	(One) slipping V-belt Rubber buffers worn	Check V-belt tension Check pretension and replace Change PTO rpm
V-belt/belts slip	V-belts / pulleys worn Insufficient pretensioning Difficult conditions	Check and replace Check and replace Adjust working depth Decrease forward speed Use thinner tines

12.0 MAINTENANCE

Before start-up:	Check bolts/nuts Connect machine to a tractor Allow the machine to idle for 5 minutes. Mount the tines	See instructions in this manual Look and listen See Chapter 15, Options
Weekly	Check gearbox oil level Clean the machine	
After **first** 20 hours of operation (new or repaired)	Lubricate PTO and roller bearings Check bolts/nuts Check V-belt tension	2 shots with EP 2
After **first** 100 hours of operation (new or repaired)	Lubricate PTO and roller bearings Check bolts/nuts Change gearbox oil Check condition and tension of V-belts	2 shots each EP 2 Use SAE 90 W
After **every** 100 hours of operation	Lubricate PTO shaft and roller bearings Check bolts/nuts Take a good look at the machine Lubricate front roller spindles Check V-belts	2 shots each EP 2
After **every** 500 hours of operation	Change gearbox oil	Use SAE 90 W

12.0 EU DECLARATION

We, Redexim BV, Utrechtseweg 127, 3702 AC Zeist, Holland, hereby declare under our own full responsibility that the product:

VERTI-CORE II WITH MACHINE NUMBER AS INDICATED ON THE MACHINE AND IN THIS MANUAL,
to which this declaration relates is according to the stipulation of the 2006/42/EC directive for machines.

Zeist, 01/10/09

A.C. Bos
Manager Operations & Logistics
Redexim Holland

13.0 V-BELT TENSIONING

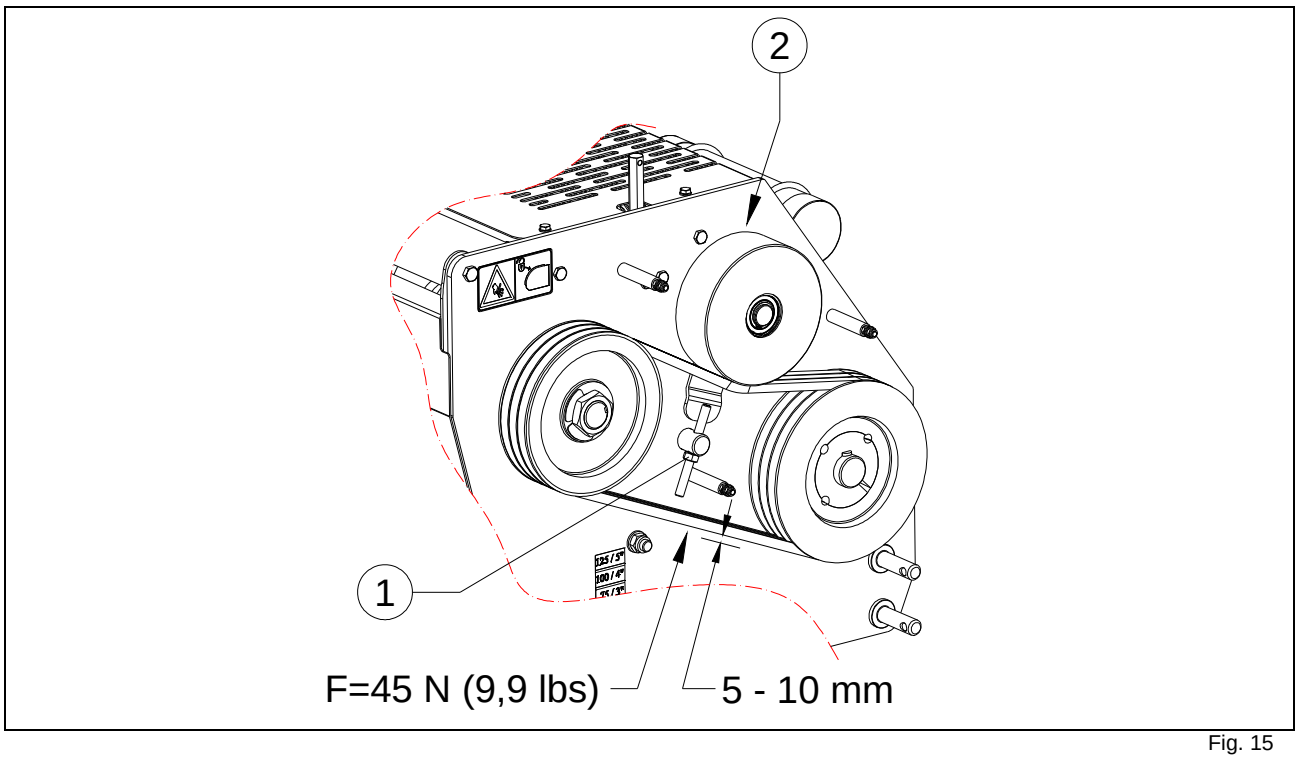

Fig. 15

V-belt tension is important and has to be checked regularly. It is also important to regularly clean v-belts and pulleys whenever required.

Belts should be checked and adjusted one by one in the following way:

1. Remove the protective cover

Check whether the tractor engine is switched off and the machine is firmly placed on the ground.

2. Apply a force of 45 N (9.9 lbs.) on the centre of the bottom part of the belt, see Fig.15.
3. You should be able to squeeze the belt 5 mm (¼“).
4. If not, adjust the belt tension.
5. Unscrew the nut (2) behind the tension roller.
6. Turn the nut (1) until you reach the right tension.
7. Tighten the nut (2) behind the tension roller.
8. Fit the protective cover on the machine.

14.0 TECHNICAL INFORMATION

The Verti-Core II is generally not a complicated machine. A number of technical items will be explained further. If you still have questions after that, you should contact your dealer, who will be happy to help you.

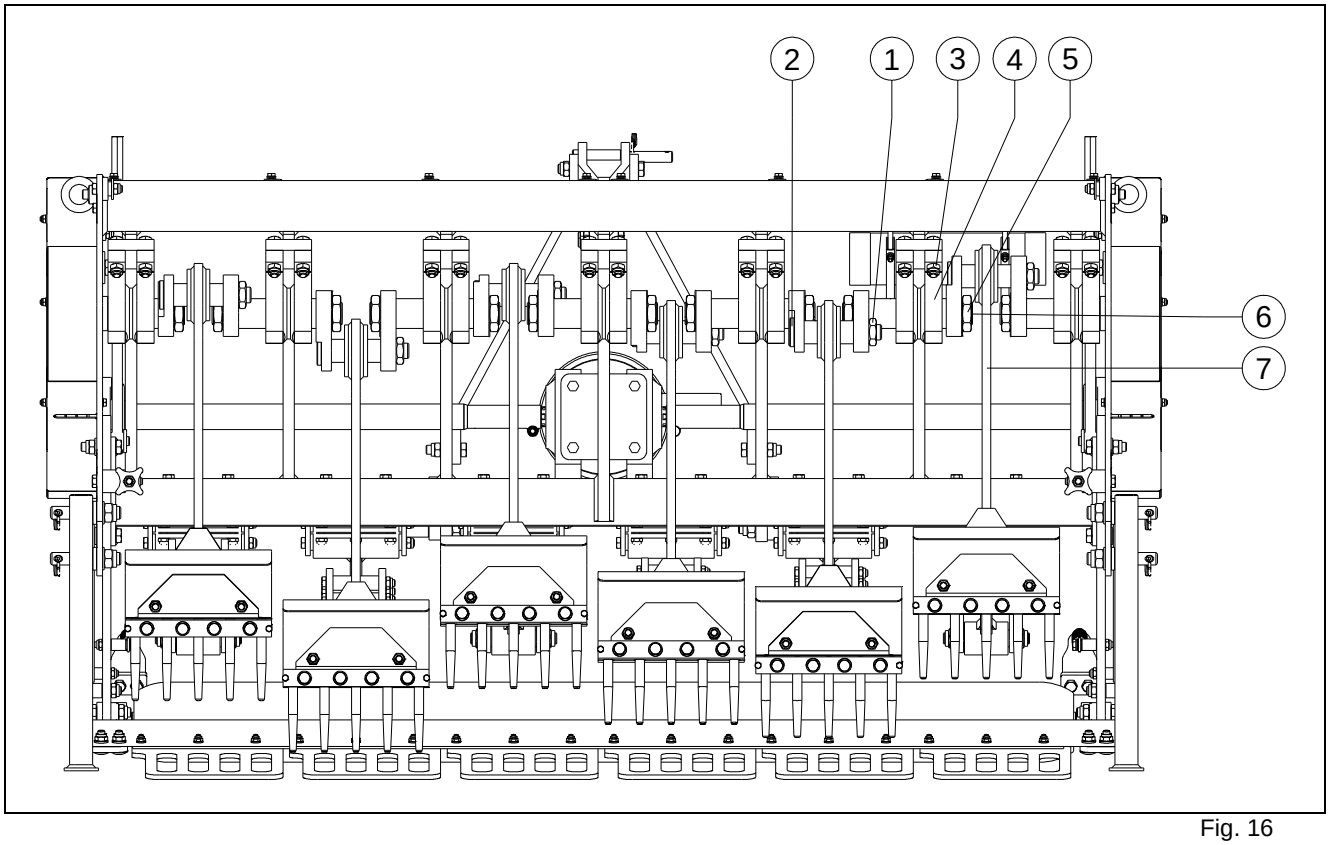

Fig. 16

Figure 16 depicts the structure of the crankshaft. Also check the parts page for more detailed drawings.

14.1 REPLACING A CRANK/CONNECTING ROD BEARING

A crank must be replaced when it has cracked or when the nuts of the big-end regularly come loose, i.e. the connection rod bearings, connection rod bearing fittings or the big-end pin holes in the crank are damaged. Replace the crank/bearings as soon as possible, in order to avoid any further damage to other parts, and do so as follows (see Fig. 16):

1. Remove the big-end nut (1) and big-end pin (2) from the driving rod (7) on both sides of the bearing (4).
2. Drive rod (7) is now detached.
3. Remove the nuts (3) from the bearing (4), and remove the bearing (4), including crank elements, from the machine.
4. Remove nut (5) and beam axle (6).
5. Remove the bearing from the beam axle (6).
6. Replace defective parts and follow reverse order to reassemble the machine.

☞ **Use Loctite for nuts (1) and (3).**

14.2 RELEASING CRANKSHAFT TENSION

When crankshaft parts have been replaced, the shaft can run less smoothly. This can be down to pretensioning. These tensions have to be released. Do this as follows, see Fig. 16:

1. Unscrew the nuts (3) of the bearings (4) a few turns.
2. Next, tighten the bearings one by one from one direction.
3. Check after each bearing whether the crankshaft runs smoothly and has no play.

☞ After repairing the crankshaft, nuts must be checked for looseness regularly.

☞ Mount the cranks in the right way; refer to the parts page for the right order and part numbers.

14.3 TIMING AND TORQUES

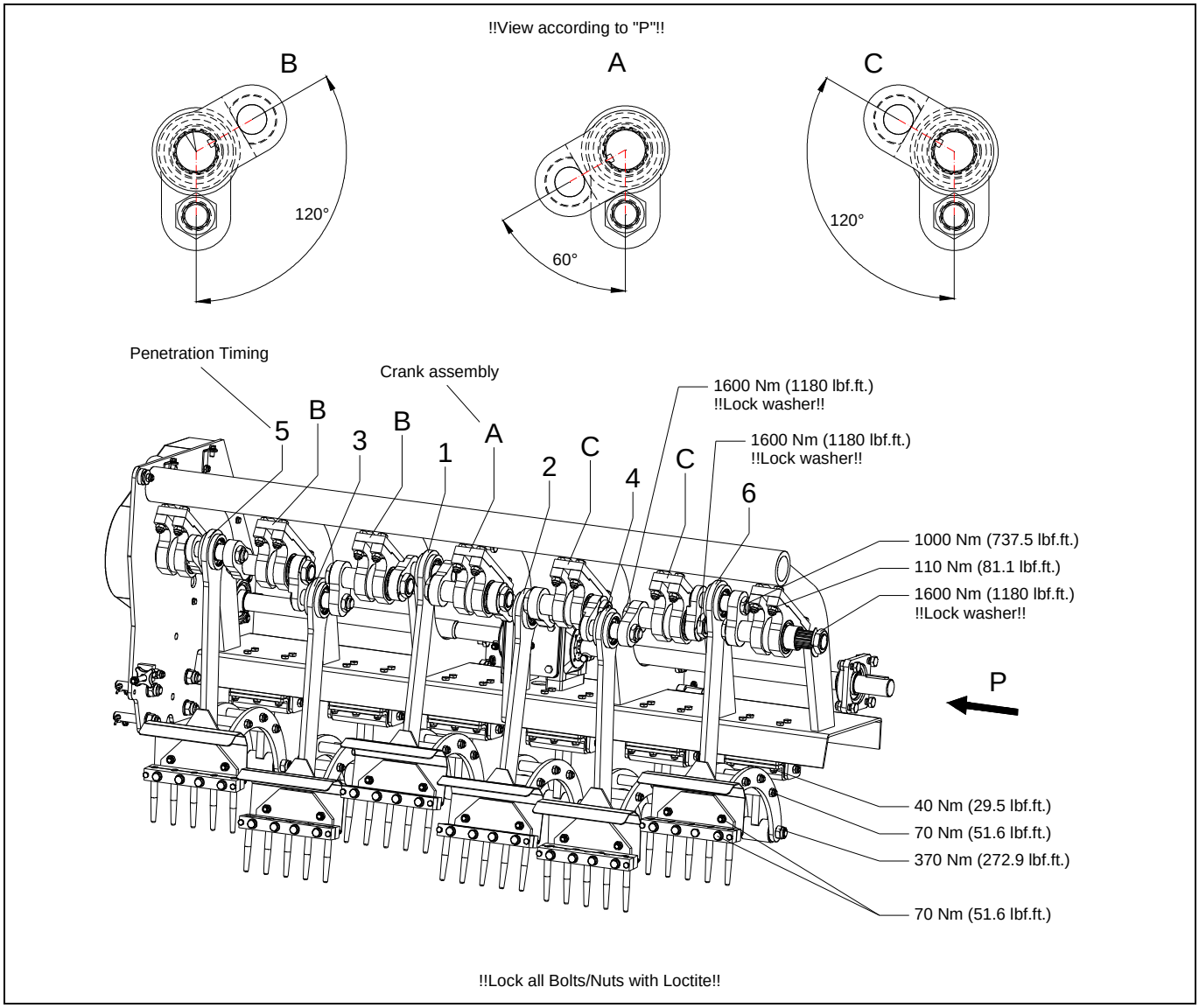

Fig. 17

Fig. 17 shows the torques of the most important nuts/bolts.
Make sure that bolts and nuts for which the torque is not shown here, are tightened with the same tightening torque as similar bolts and nuts. When bolts and nuts come loose, you can use Loctite to tighten them.

15.0 OPTIONS

The Verti-Core II is intended as a hollow core machine.

Always use tines with the same length and thickness. Replace bent tines right away. If you fail to do so, the machine can become unstable. Do not use tines that are thicker and longer than specified in the technical specifications.

Shorter (worn) tines can be used in cases where less working depth is required. Remember that the depth indication on the sticker is only correct when using maximum length tines.

We recommend leaving the core guide plates (2) on the machine at all time, in order to protect the machine against dirt. The pages listing spare parts provide part numbers of the different parts.

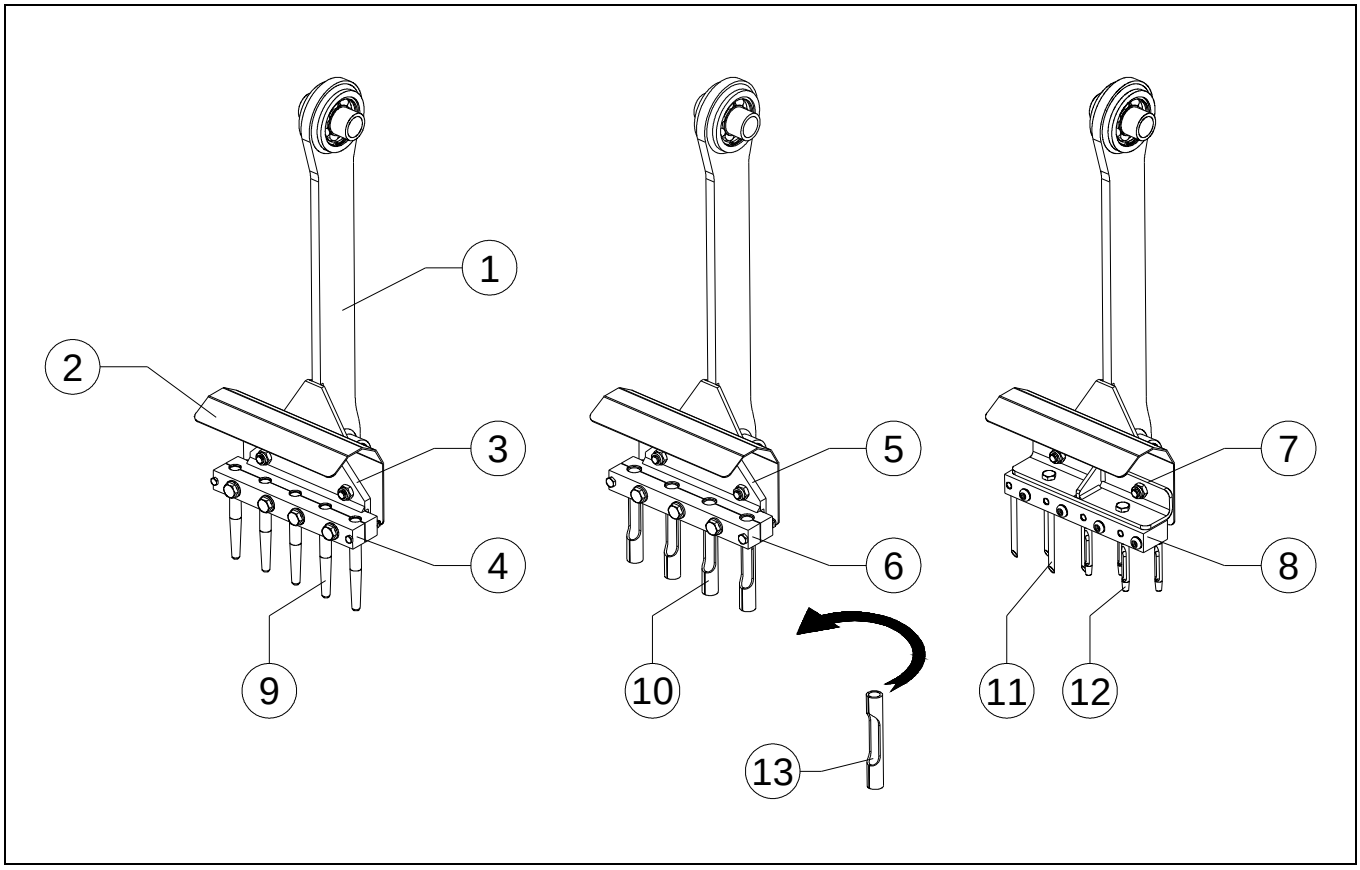

Fig. 18

15.1 HOLLOW TINES

The opening of the tine (13) must always face the back of the machine, see Fig. 16.

If stones are expected in the lawn, you should use heavier hollow tines, as well as a raised rpm, given that lighter hollow tines are more prone to bending.

The machine is supplied with 19mm (3/4") tine blocks (3+4) with 5 tines (9) per block as standard.
There is also the option of 7/8" tine blocks (5+6) with 4 tines (10), or multi tine blocks (7+8) with 8 tines (11 or 12) per block.

15.2 TURF HOLD DOWN FINGERS

Turf hold down fingers for standard tine holders are mounted on the machine as standard. There are also other turf hold down fingers available for heavier tines.

☞ The machine has to be at right angles to the ground, see Fig. 11.

☞ When plates have bent in one and the same direction after a period of being in use, you can simply attach them the other way round.

⚠ Be careful when installing the turf hold down kit. Especially the first time, when plates have to be aligned with the tines. **The machine must be stable and firmly on the ground.**

15.3 WINDROW KIT

When aerating using hollowing tines, cores are removed from the ground. The Windrow kit ensures that these cores are subsequently gathered so that they can be removed easily after working on the lawn. This kit is available under number 212.160.012